KALPA

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ICAR-CENTRAL PLANTATION CROPS RESEARCH INSTITUTE
Kasaragod - 671 124, Kerala

From The Director's Desk

GST and plantation sector

In India, we do not have tax on agricultural income. However, taxes on other products connected with agriculture have implications on farmers earnings. The agricultural sector is the largest sector contributing to the overall Indian GDP. We have plenty of wealth in our agricultural lands, which cannot be equated in terms of annual income in monetary value. Plantation crops sector is a significant contributor to this effect. Traditional farming is continuing in majority of farms, irrespective of the quantum of profitability from land holdings. The impact of recently introduced Goods and Services Tax (GST) on agricultural sector is foreseen to be positive. As far as the agricultural production and marketing is concerned, there is nothing to worry because the processes have been simplified now.

One of the major issues faced by the agricultural sector is the transportation of agriculture products across states. Movement across the sales tax check-posts used to cause delay in movement of goods. Time saved due to free movement of goods, esp. perishable commodities will not only save expenditure on transport, but also better market. Goods requiring refrigerated containers can save a lot on transportation cost.

When organic farming, recycling of locally available biomass and bio-control of pests and diseases are concerned, there is little to worry on the market price of fertilizers and pesticides, as such. Once again, we are going to see kaleidoscopic view of green revolution, when we have a strong and committed national agricultural research system in place. On the other hand, the processed product from agricultural raw materials are treated well, by giving benefit to farm level processing and value addition. Unlike other products, junk foods, extracts and essences at 18% and 24% (such as cocoa butter and fat), tax imposed on the processed food taxes will be only 12%. Basic food items have 5% and the food raw materials do not attract any taxes. Much more clarity on the taxation on various items will be available within a few weeks on digital networks.

Ultimately, GST may provide India with Unified National Market for the agricultural goods. Implementation of GST is going to benefit the farmers and distributors in the long run as there will be a single system. It is noteworthy that GST would ensure that farmers in India, who contribute the most to GDP, will be able to sell their produce for the best available prices. Another thing which is becoming more and more clear and transparent is the financial transactions, becoming more systematic and helpful to build a strong nation. Therefore, in the long run there are expectations of stabilized market rates resulting in better forecasting and planning.

CONTENTS

SPECTRUM

Cryopreservatory of coconut pollen for utilization in resistance breeding programmes

The demand for seedlings of Kalpa Sankara (CGD X WCT) hybrid, notified and released for the root (wilt) disease prevalent tract is very high. In order to enhance the hybrid seedling production, high yielding disease-free Chowghat Green Dwarf (CGD) mother palms located in farmers' plot are selected for artificial pollination to be carried out in a decentralized mode. The male flowers were collected from ELISA tested root (wilt) disease-free West Coast Tall (WCT) parental palms and processed at ICAR-CPCRI, Regional Station, Kayamkulam and stored in deep freezer/ liquid nitrogen. The stored WCT pollen will be transported to each *Panchayat/Krishi Bhavan* and kept in desiccators. Through this centralized mechanism of pollen processing, disease-free status of the male parental palms and quality of the pollen can be assured. Presently 60 high yielding and disease-free WCT male parental palms are used for collecting male flowers. From one inflorescence, approximately 6-8 g of pollen could be obtained, which was transferred to 8-10 cryo vials (2.0 ml capacity). Cryo vials were stored in liquid nitrogen cans; a can of 121 litre capacity can store up to 6000 samples. One vial (filled with 1.5 gram pollen) can be used for pollinating six CGD palms for two days. This pilot programme has been taken up for decentralized hybridization throughout Kerala.

Cryo-preservation facility at ICAR-CPCRI, Regional Station, Kayamkulam

Regi J. Thomas and Shareefa M.

Lipid peroxidation and electrolytic leakage studies on coconut seedlings under moisture-deficit stress

Malondialdehyde (MDA) content is an index for evaluating the lipid peroxidation status of the plants. Total MDA content in the leaves of coconut seedlings [Chowghat Green Dwarf (CGD); Kalpatharu (KT); Malayan Yellow Dwarf (MYD); Kalpa Pratibha (KP)] that were grown under different moisture regimes was evaluated. Lower MDA content implies higher anti-oxidative ability, thereby reflecting the chances of relatively high drought tolerance. This study showed that the dwarf cultivar CGD and the tall cultivar KT grown under well-watered condition (100% of field capacity) exhibited low MDA values (10.44 and 17.14 nmol g^{-1} fr. wt. respectively) implying their inherent drought tolerance. Furthermore, MDA content of the cultivars grown under moisture-deficit stress showed a progressive increase suggesting the influence of water stress on plant's biochemical mechanism. The dwarf cultivars *viz*., CGD and MYD showed relatively low MDA content (17.32 and 28.62 nmol g^{-1} fr. wt. respectively) compared to tall cultivars i.e., KP and KT (46.98 and 34.62 nmol g^{-1} fr. wt. respectively) when they were grown under reduced water supply i.e. one quarter of the moisture applied to the control plants (25% of field capacity).

Electrolytic leakage studies on the leaves of coconut seedlings subjected to water-deficit stress revealed progressive increase in membrane damage with the increase in moisture-stress. The increase in membrane damage was observed irrespective of the four cultivars studied implying the extent of damage caused due to drought stress on the

membranes. Interestingly, when the moisture stress was imposed to the seedlings, the relative increase in electrolytic leakage was high for cultivars CGD (from 13.83% to 20.01 %) and KT (from 16.49 to 22.45%) as against a low increase for cultivars MYD (from 15.13% to 18.62 %) and KP (from 14.53 to 17. 49%). The effect of increased MDA content and electrolytic leakage suggest that coconut seedlings undergo extensive membrane damage when exposed to moisture-deficit stress.

Ramesh S.V., Arivalagan M., Sugatha P. and Hebbar K.B.

A new beetle in swachh palm abhiyan

Feeing by the invasive rugose spiralling whitefly (*Aleurodicus rugioperculatus* Martin) resulted in honey dew deposition on the upper surface of coconut palm leaves leading to the formation of black sooty mould (*Capnodium* sp.). This black coating caused by fungal growth affects the photosynthetic efficiency of palms. A close examination of the sooty-mould tainted leaves led to the identification of a fungus feeding tenebrionid beetle, *Leiochrinus nilgirianus* Kaszab (Coleoptera : Tenebrionidae). This beetle has a body shape and colour pattern resembling lady beetles (Coccinellidae). These beetles were generally confined to the undersurface of the palm leaves during day-time, but were found feeding on sooty mould during morning hours (7.00-8.00 am) in damp condition in sufficiently good numbers. Upon feeding, the black sooty mould deposits were completely cleansed and the leaves became bright green that revived the photosynthetic efficiency. More than three beetles could be observed on the same leaflet in the ecological bioengineering experiment garden which favoured the ecological guild for the defender as well as scavenging beetles. This is the first report on the occurrence of a tenebrionid beetle feeding on the sooty mould fungus in palm ecosystem. In addition to flaking out the sooty mould fungus by spraying 1% starch solution, conserving *Leiochrodes* sp. - is another good strategy to accomplish swachh palm abhiyan.

Tenebrionid beetle feeding on sooty mould of coconut

Josephrajkumar A., Chandrika Mohan and Poorani J.

Entomopathogenic nematodes (EPN): An alternative to control coconut rhinoceros beetle

Coconut rhinoceros beetles, *Oryctes rhinoceros* L. (Scarabeidae: Coleoptera) greatly limit the coconut production in India and elsewhere. Damage is caused by the adults feeding on the crown, while larvae feed mainly on the decaying matter. Larvae are cryptic in nature and

hide in the breeding substrate until developing into adults. Common breeding sites are dead standing palms, logs and stumps, cow dung, compost pits, saw dust heaps, decaying organic matter pits etc. By considering the advantages of entomopathogenic nematodes (EPNs) having movement ability, high virulence and easy mass rearing and safety to non target organism and its potential as bio-control agents on soil dwelling insects, a comparative susceptibility of aqua formulation of three strains of EPNs, *Steinernema carpocapsae* (CPCRI - SC1), *S. abbasi* (CPCRI - SA1) and *Heterorhabditis indica* (CPCRI - HI1) were tested against 2nd - 3rd instars of rhinoceros grubs under laboratory. Tested EPNs caused 100% mortality to rhinoceros grubs within 24 - 72 hr periods. Two species of Steinernematidae were more effective on the *Oryctes* larvae than *H. indica*. The affected cadaver shows a characteristic light yellowish brown to dark black colour. On the highest, emergence of 1,25,600 IJs (infective juveniles) was recorded per grub at 25°C temperature, indicating its high reproductive ability in the host.

Progression of EPN infection in rhinoceros grubs, oozing reproductive juveniles from *Oryctes* cadavers

Rajkumar and Sujithra M.

IMPORTANT EVENTS

Union Minister of State for Agriculture & Farmers Welfare visited Muttar village

The Union Minister of State for Agriculture and Farmers Welfare, Mr. Sudarshan Bhagat visited Muttar on 4th May, 2017, the only village in Kerala where the project on 'National Innovations in Climate Resilient Agriculture' (NICRA) being implemented and interacted with farmers to know the developments occurred in the agriculture scenario of the village through the implementation of NICRA project for last five years. The Minister explained about the farmer friendly development programmes implemented by the Govt. of India in various parts of the country like Prime Ministers Fasal Bhima Yojana, Krishi Sinchayi Yojana, Soil Health Card programme etc for doubling the farmers' income by 2022. He also emphasized the need for Integrated Farming System (IFS) approach for sustainable development of the farmers by incorporation of crops with dairy, fisheries, poultry, duck and other enterprises for doubling the income. Dr. Sreenath Dixit, Director, ICAR-ATARI, Bengaluru, briefed about the technology demonstrations carried out in the NICRA project by ICAR-KVK-Alappuzha for the last five years. Shri Kummanam Rajasekharan, State President BJP, peoples' representatives and officials of Agricultural Departments were present during the function. About 150 farmers attended the programme and shared their experience with the minister.

Shri Sudarshan Bhagat, Minister of State for Agriculture and Farmers Welfare addressing the farmers at Muttar

Institute Research Committee Meeting

The 45th Annual Institute Research Committee (IRC) Meeting of the ICAR-Central Plantation Crops Research Institute was held at ICAR-CPCRI, Kasaragod from 3rd to 7th April 2017 Kasaragod under the chairmanship of Dr. P. Chowdappa, Director. The meeting was conducted in nine sessions including an introductory and a plenary session for reviewing 38 research projects, including 28 externally funded projects. Progress of work and achievements made under the ongoing research projects were discussed in detail and the technical programme for the year 2017-18 has been formulated during the meeting.

The plenary session of the 45th IRC was held on 07th April, 2017 at ICAR-CPCRI, Kasaragod. Dr. P. Chowdappa, Director, ICAR-CPCRI, Kasaragod chaired the session and Dr. K. Nirmal Babu, Director, ICAR-IISR, Kozhikode co-chaired the session. Sri Jeevan Saldanha, Karnataka Chamber of Commerce, Dr. P.R. Suresh, Associate Director of Research, RARS (KAU), Pillicode and Shri Babulal Meena, Directorate of Arecanut and Spices Development, Kozhikode were the special dignitaries and Shri H.M. Shiva Prasad, Shri B.K. Ramesh and Shri K.H. Krishna Prasad represented the farmers to suggest refinement in the research programmes of the Institute.

Dr. P. Chowdappa, Chairman, highlighted the salient research accomplishments of the Institute and projected the viable technologies for the industrial and farming sector augumenting economic and social sustainability. He expressed commitment and full support of ICAR-CPCRI to double farmers' income. Dr. Nirmal Babu, Co-Chair, stressed on the need for popularizing technologies in a better way and frequent interactions with business experts for marketing of the technologies.

Dr. K. Nirmal Babu, Director ICAR-IISR, Kozhikode addressing IRC members at Kasaragod during the Plenary Session

Stakeholders meeting on coconut leaf eating caterpillar outbreak in Mangaluru

A stakeholders meeting regarding recent outbreak and management of leaf eating caterpillar (*Opisna arenosella* Walker) at Thokkotu, D.K. was organized by ICAR-CPCRI, Kasaragod on 17th May 2017. Personnel from KVK, Mangalore, KVK, Udupi, State Horticulture Department, Mangalore, Parasite Breeding Station, Thumbe, and Parasite breeding Station, Kasaragod participated in the meeting. By considering all these factors, field release of parasitoids in the evening hours was suggested for successful establishment parasitoids.

One day training cum refresher course for the surveillance squad of ICAR-CPCRI regarding "Pest and Disease- Diagnosis, Surveillance and Management" was also conducted on 18th May, 2017 under the chairmanship of Dr. Vinayaka Hegde, Head, Division of Crop Protection. Surveillance squad personnel of ICAR-CPCRI, Kasaragod attended the training programme.

PUBLICATIONS

Research Articles

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Ramesh, S.V., Williams, S., Kappagantu, M., Mitter, N., Pappu, H.R. 2017. Transcriptome-wide identification of host genes targeted by tomato spotted wilt virus-derived small interfering RNAs. *Virus Research* **238**:1323.

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Presented Papers

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Book Chapters

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HUMAN RESOURCES DEVELOPMENT

Deputation Abroad

Dr. K. Balachandra Hebbar, Principal Scientist and Head, Division of PB & PHT and Dr. S. Elain Apshara, Principal Scientist (Hort.) have visited University of Reading, UK, during 6-8 June 2017 to attend

Dr. K.B. Hebbar and Dr. S. Elain Apshara along with other international collaborating scientists at University of Reading, U.K.

a meeting on development of "Collaborative Framework for Cacao Evaluation (CFCE) focusing on drought/heat/CO_2 and multi-site evaluation trials" organised by Bioversity International, Italy.

PG Studies

Dr. T. Sivakumar, SMS (Agrl. Entomology) was awarded doctorate degree from Kerala Agricultural University. He conducted his research work on 'Management of banana pseudo stem weevil using safer chemicals and bio rational methods' under the guidance of Dr. Jiji T.

DISTINGUISHED VISITORS

Shri Rishi Raj Singh, IPS, Excise Commissioner, Govt. of Kerala visited ICAR-CPCRI Kasaragod interacting with Dr. P. Chowdappa, Director. He visited the Institute on 17th May, 2017 to inspect the Neera tapping from coconut palms at Kasaragod

Dr. P. Chowdappa, Director explaining vermicomposting experiments to Shri Chhabilendra Roul, IAS, Addl. Scecretary, DARE & Secretary ICAR at Kasaragod. Shri Roul visited Kasaragod on 30th June, 2017 during his visit to various ICAR establishments in Kasaragod, Madikeri, Mangaluru and Puttur

Sh. Raghavendra Suvas (IPS), DIG, Intelligence Bureau, Jaipur had visited ICAR-CPCRI, RC, Kidu on 10 April, 2017.

TRANSFER OF TECHNOLOGY

Training Programmes

Training programme on 'Value addition in coconut' was conducted at ICAR-CPCRI, Kasaragod for the farmers from Madikeri, Kodagu district in collaboration with State Department of Horticulture, Karnataka on 19th April 2017.

Training programme on 'Crop management and value addition in coconut 'was conducted

Inauguration of National Level Training on Cocoa at ICAR-CPCRI, Vittal

for the farmers of Udupi district in collaboration with State Department of Horticulture, Karnataka during 26-27 April 2017.

A training programme on 'Coconut production technologies 'for 46 farmers from Kozhikode district was organized at ICAR-CPCRI Kasaragod on 16th May, 2017 in collaboration with ATMA Kozhikode.

RAWE programme for the B. Sc. (Agri.) students from College of Agriculture, Vellayani was conducted at ICAR-CPCRI, RS, Kayamkulam during 19-22 April, 2017. Scientists empowered the students on the ongoing research programmes of the Station, cutting-edge technologies in coconut and proposals for winning project modules and fine-tuned the assigned project proposals to perfection.

Other programmmes conducted at ICAR-CPCRI, Vittal include, an inter-state training on 'Advances in arecanut and cocoa production technology' on 3- 4th May, 2017 for 46 trainees under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), Irikkur, Kerala. A National Level Training funded by DCCD, Kochi was conducted on 'Advances in cocoa production and processing technology' during 25-27th May 2017, for 32 field level officers from Kerala, Karnataka, AP, TN state horti/ agri departments and officials from DCCD, CAMPCO, Mondelez.

Demonstration of pruning of cocoa during "National Level Training on Cocoa for Agricultural Officers" at ICAR-CPCRI, Vittal

A training programme on 'High density multi species cropping system (HDMSCS)' was conducted at ICAR-CPCRI, RC, Kahikuchi on 24th May, 2017. Forty eight farmers from Baksha, Kokrajhar and Kamrup district of Assam participated in the training.

A training programme on 'Production and processing technology of black pepper' was held at ICAR-CPCRI, RC, Kahikuchi on 29th May, 2017. Thirty one farmers from various parts of Kamrup (R) district of Assam were trained on the day.

Training on black pepper cultivation as intercrop in arecanut gardens at ICAR-CPCRI, Kahikuchi

Off-campus training programmes

Another training session on 'Management practices of coconut with special emphasis on improved varieties suitable for root (wilt) disease prevalent tract' was conducted on 19th June, 2107 for 150 farmers of Kaduthuruthy Panchayat, Kottayam District, as a part of ATMA Scientist- Extension Personnel - Farmer interface programme.

A training programme on IPM of coconut was organized by Farmer group of Chadayamangalam under PMKSY sponsored by Kerala State Department of Agriculture Development and Farmer's Welfare on 24th April, 2017.

Tissue culture hardening programme was held on 12th April, 2017. A group meeting on livestock farmers on hydroponics

on fodder crops was convened on 19th April, 2017. Scientific paddy (navara) cultivation technology demonstration was held on 3rd May, 2017 and a method demonstration of planting material preparation of Amorphophallus to women SHG members was convened on 6th May, 2017. Soil sampling methods and integrated nutrient management of coconut was conducted on 8th May, 2017 and scientific mushroom cultivation for rural youths was held on 16th May, 2017. Pests and diseases management of coconut for coconut producer's societies was conducted on 22nd May, 2017. Mass multiplication methods of Trichoderma- method demonstration were held on 24th May, 2017 and scientific paddy cultivation WSHGs was convened on 17th June, 2017.

Interactive meeting of farmers of demonstration plots and scientists at Sringeri, Karnataka

An interactive meeting with farmers of the of demonstration plots of root grub and yellow leaf disease (YLD) management in arecanut and scientists was organized at Honnavelli village, Sringeri taluk, Karnataka on 12th April, 2017. Dr. Ravi Bhat, Head Crop Production and Dr. Vinayaka Hegde, Head Crop Protection Divisions along with Dr. Rajkumar and Shri Bhavisya, Scientist, ICAR - CPCRI were present to discuss about the management of root grub using entomopathogenic nematodes (EPN) and yellow leaf disease (YLD) management in arecanut. Farmers shared their experiences and improvements based on the recommendations from the institute for integrated disease and pest management in arecanut. A total of 25 local farmers and farm workers participated in the meeting. A diagnostic field visit also has been conducted after the meeting.

Diagnostic visit to areca gardens at Sringeri, Karnataka

Training on 'Mass Multiplication of Trichoderma' was organized for Members of Guttigar Valaya Parishath at Mogra Sathyanarayana Bhat's House, Guttigar, Sullia Tk., Dakshina Kannada Dt., Karnataka on 26th April 2017. Twenty six farmers participated in the training and got benefitted.

Diagnostic field visit in coconut gardens at Udumalpet, Tamil Nadu

Scientists from IACR-CPCRI visited the coconut garden of Shri S. Selvaraj, 4/154 A Venasapatti, Gomathipalayam P.O., Udumalpet on 19th June, 2017 and found moderate level of basal stem rot disease in palms coupled with moisture stress prevailed in the locality. Remedial measures such as need based irrigation, soil drenching of hexaconazole, application of bio-suppressive compost and recommended fertilizers along with soil and water conservation measures were advised to rejuvenate the affected palms.

Exposure visits

An exposure visit - cum training programme on 'Integrated crop management and value addition in coconut' was conducted for 25 selected Progressive farmers from Lakshadweep Island was held at CPCRI, Kasaragod on 20th May, 2017 in collaboration with Department of Agriculture, UT of Lakshadweep.

An exposure visit cum training programme on 'Management of coconut gardens' for 40 farmers of Karivellur Weaver's Society, Karivellur was conducted at CPCRI, Kasaragod on 20th May, 2017.

An exposure visit cum training programme on 'Coconut production technologies' was conducted on 25th May, 2016 for 30 farmers from Kozhikode at ICAR-CPCRI, Kasaragod under the project 'Enhancing economic viability of coconut based land use system for land use planning in kerala'.

Two exposure visits have been conducted during the period to ICAR-CPCRI, RC, Kidu of which, 25 farmers from Belthangady Taluk, Karnataka and 15 Post Graduate students from UAS, Bangalore, Karnataka were benefitted.

Farmers from Lakshadweep Islands during field visit with scientists at Kasaragod

Seven training cum exposure visits were organized at ICAR-CPCRI, Regional Station, Vittal for the benefit of 270 trainees. Lecture cum discussion on crop improvement, production, protection and processing technologies of arecanut and cocoa were highlighted.

A total of 120 farmers from Garubathan, Dearjeeling and Dinhata, Coochbehar visited this Research Centre On 11th May, 2017, and 12th May, 2017.

Eighteen progressive farmers from Kalchini block of Jalpaiguri district, West Bengal (on 24th May, 2017), Twenty seven newly recruited Development/Technical officers of Spice Board, Guwahati (on 27th June, 2017) and Forty students from Biswanath College of Agriculture, Assam Agriculture University (on 12th May, 2017) were acquainted with the technical know-how on plantation crops as part of Exposure visit to ICAR-CPCRI, Kahikuchi.

QR coded coconut seedlings

ICAR-CPCRI, Regional Station, Kayamkulam distributed 14,850 coconut seedlings of released varieties during June 2017 to farmers in the root (wilt) disease prevalent tract. All coconut seedlings were tagged with water proof labels (with emblem of ICAR-CPCRI and variety name imprinted on one side and Quick Response (QR) code imprinted on the other side. The labels also have Unique Identification Number (UID) imprinted along with the QR code).

Radio / TV Programme / Video Conferencing

Latest coconut varieties suitable for root (wilt) disease endemic zones, production and pest management technologies were broadcast by Kerala Doordarshan on 28th April, 2017.

Dr. Arun Kumar Sit, Principal Scientist (Hort) conducted two TV programme on "Raising of black pepper cutting" and recent advances in cocoa cultivation in North Bengal region " with the help of Kisan Channel, Doordarshan Kendra Jalpaiguri on 19th May, 2017.

Director, ICAR-CPCRI in videoconferencing with the farmers at the Coconut Development Board, Kochi

Dr. Arun Kumar Sit, Principal Scientist (Hort.) attended Live phone in Programme on Scientific Arecanut and coconut cultivation at AIR, Siliguri on 25 May, 2017.

KVK, Kasaragod

Management of leaf eating caterpillar in coconut

An awareness programme was conducted at Bedire, Kasaragod regarding the management of leaf eating caterpillar in coconut in collaboration with Kasaragod Municipality, Dept. of Agriculture Development and Farmers Welfare, Govt. of Kerala, CPCRI and Kasaragod Krishi Vigyan Kendra on 24th May, 2017. A total of 21 farmers were appraised on the benefits of biological control measures. Release of parasitoids were also demonstrated as a part of the programme.

Demonstration of leaf eating black headed caterpillar by release of predator *Opisina arenosella* at farmers field in collaboration with Department of Agriculture, Kerala at Kasaragod

Management of pests and diseases of arecanut

The programme on management of pests and diseases of arecanut was conducted jointly by ICAR-CPCRI, KVK, Directorate of Arecanut and Spices Development, Kochi, Uduma Gram Panchayat and Krishi Bhavan. The programme was inaugurated by Dr. Ravi Bhat, Head, Crop Production Division, CPCRI and presided over by Sri. Muhammedali, President, Uduma Panchayath. Sessions were conducted on pest management in arecanut, disease management in arecanut, nutrient management, value addition and marketing aspects followed by a farmer-scientist interaction. Around 150 farmers attended the programme.

Value addition and income generation

Skill development training imparted in preparation of Jackfruit jelly / Jackfruit based

Entrepreneurship development training on food processing for women at KVK, Kasaragod

mixed fruit jam and banana leather. Ten women from Kudlu village were benefitted. In separate programmes, kokum squash and syrup was processed in the lab and put for sales through KVK sales counter, skill development on user friendly fibre, jack fruit pappad preparation and use of dehydrated jack fruit seed in preparation of nutraceutical chutney mixes.

KVK, Alappuzha

Sensitization meeting of stakeholders for up scaling successful interventions of the KVK

Sensitization meetings for the members of Mararikulam South and Mannancherry Grama Panchayaths, Officials of the State Department of Agriculture and Progressive farmers along with KVK officials were conducted on 24th May, 2017 and 31st May, 2017, respectively for formulating an action plan for the up scaling of successful interventions made by ICAR-KVK-Alappuzha in both the panchayths. Dr. P. Muralidharan, Principal Scientist and Head, ICAR-KVK-Alappuzha presented the details of technology interventions and impact made through these efforts on the farming community. Presidents, Standing committee chairpersons, Grama panchayath members, Agricultural Officers and progressive farmers attended both the programmes. It was decided to include the successful interventions in the annual agriculture plan of the panchayaths for up scaling.

Organic cultivation of winged bean in homesteads

ICAR-Krishi Vigyan Kendra Alappuzha has conducted a Frontline Demonstration on 'organic cultivation of winged bean in homesteads' in Mararikulam south and Mannanchery panchayaths of Alappuzha district. The field day of the FLD was conducted on 11th April, 2017 at Pathirappalli. The programme was inaugurated by the Vice President of Mararikulam South Grama Panchayth Shri. M.G. Laiju, in a function held at Udaya library, Pathirappalli. He appreciated the efforts taken by Krishi Vigyan Kendra for uplifting the farming community in the panchayath to noval technologies through different technology interventions in crop production, soil conservation, plant protection and animal husbandry. Smt. M.G. Prasanna, President, ADS, Dr. P. Muralidharan, PS & Head, ICAR-KVK-Alappuzha, Dr. K. Sajnanth, SMS, ICAR - KVK - Alappuzha and Smt. Mini, Secretary, ADS addressed the farmers gathered. Farmers' representatives shared their experiences

EM composting of plant residues for organic manure production

The field day of the FLD on 'EM composting of plant residues for organic manure production' was conducted on 11th April, 2017 at Kattoor in a function organized in the house of one partner farmer, Shri Rajmohan. The programme was inaugurated by Shri Sivakuttan, Ward Member, Mararikulam South Grama Panchayth. He highlighted the farmer friendly approach adopted by Krishi Vigyan Kendra in utilizing the natural resources for the benefit of farming community in the panchayath through various technology interventions in agricultural and allied aspects. Dr. P. Muralidharan, Principal Scientist and Head, ICAR-KVK-Alappuzha projected the relevance of these activities in reducing the environmental pollution and helping the crops to adjust with new climatic conditions. The FLD was conducted at Mararikulam south and Mannanchery panchayaths of Alappuzha district during 2016-17 to improve soil health conditions through recycling of the bio wastes.

Introduction of Aseel breed in backyard system of poultry rearing

In order to popularize the Aseel breed of poultry in backyard system, ICAR-KVK-Alappuzha has conducted a FLD on 'Introduction of Aseel breed in backyard system of poultry rearing' during 2016-17 in Mararikulam and Mannanchery panchayath. In this programme twenty demonstrations were conducted with five birds in each unit. Field day was conducted on 11th April, 2017 in the residence of Smt. Soudha, Kavungal, Mannanchery one of the partner farmers. Function was chaired by Smt. Minimol, ward member of Mannanchery Grama panchayath. She congratulated partner farm women and advised them to scale up the activity as an income generation enterprise.

Dr. P. Muralidharan, PS & Head, Smt. Rekha, CDS Chairperson, Mannanchery Panchayath and Dr.S.Ravi, SMS (AH) address the farmers on the occasion. While sharing the experience, the partner farmers sated that, this breed was very useful in backyard system of rearing as it protect their flock from the predators such as mongoose and snakes.

Cluster based integrated pest management practices against mango fruit fly

Field day was conducted in connection with the FLD on cluster based integrated pest management practices against mango fruit fly at Kalavoor, Mannancherry panchayath on 11 May, 2017 and on at Mararikulam South panchayaths. Peoples' representatives, Mr. M.S. Santhosh, Mrs. Sindhukkutty & Agricultural Officer attended the function. Partners of FLD shared their experience and were convinced on the success of the technology. They demanded for expansion and continuation of the programme through local body support. KRA president Mr. K. P. Harilal, Secretary Shri. Rajendran Nair shared their views. In the interactions with farmers, it was stressed on the proper disposal of fruit fly affected fruits to prevent population build up in the area. Participant farmers were convinced on the effectiveness of MET and opined that fruit fly infestation was reduced this year compared to previous year. They also noted certain varieties are prone to fruit fly infestation while, some showed resistance. Dr. P. Muralidharan (Head & PS) addressed the participants and gave suggestions to spread the technology further in the panchayath. Reacting to farmers queries Dr. Sivakumar. T. (SMS) appealed the participant farmers to disseminate the knowledge they gained through the FLD programme. Mr. Rajeev. M. S., Mrs. Lekha .G. and Dr. K. Sajnanath also attended the field day.

Training programmes

Programme	No. of trainings	Participants		
		Men	Women	Total
On campus	10	105	86	191
Off campus	19	240	318	558
Total	**29**	**345**	**404**	**749**

Inauguration of the 'Seedling production unit of spice crops'

A seedling production unit established by ICAR-KVK-Alappuzha as an EDP was inaugurated by Shri. R Rajesh, MLA at Bharanikavu Panchayath Community hall on 19th June, 2017. Shri Rajesh emphasized the need of quality planting material production for increasing the yield and profitability of farmers. The EDP unit run by Sneham Cultural and Charitable Society, Elippakulam aims to produce quality planting materials of ginger, turmeric, pepper, vegetables etc for the benefit of shareholders of Onattukara Spices Farmers Producer Company Limited (OSFPC) promoted by the KVK. Shri A. M. Hashir, President, Sneham Cultural & Charitable Society presided over the function in which Dr. P. Muralidharan, PS and Head, ICAR-KVK-Alappuzha detailed the purpose of programme. The meeting was followed by a training programme on scientific spice cultivation. About 100 farmers attended the inauguration programme.

Inauguration of the programme by Sri R Rajesh MLA at Bharanikavu, Alappuzha, Kerala

KVK-ATMA Linkage

Kisan ghosti - Smt. Lekha, G., Subject Matter Specialist (Plant Pathology)\s attended the Kisan Ghosti organized by ATMA at Community Hall, Bharanikkavu and presented a topic on 'Organic pest and disease management in major crops' on 17th June, 2017.

Scientist - Farmer interface - Agricultural Technology Management Agency and Animal Husbandry Department, Alappuzha district in collaboration with ICAR - KVK - Alappuzha organized a Scientist - Farmer interface at Kanjikuzhy on 17.06.2017 on the occasion of the launching of a marketing centre for animal husbandry products. Dr. P. Muralidharan, PS& Head, ICAR-KVK-Alappuzha and Dr. T. Giggin, SMS (AH), KVK-Kannur interacted with about 100 farmers who attended the programme.

PARTICIPATION IN SEMINARS/SYMPOSIA/CONFERENCES/WORKSHOPS

Name and designation	Title	Place and date
Dr. P. Chowdappa, Director	Interactive Meet on Prospects and potential for Cocoa in Karnataka	UAHS, Shivamogga 06-05-2017
	Seminar on "Entrepreneurs Development and Industrial Opportunities in Areca"	SDMIT, Ujire, Karnataka 09-05-2017
	35th Group Meeting of AICRP on Vegetable Crops	IIHR, Bengaluru 25-06-2017
	Workshop on 'Emerging Applications of Space Technology in Agriculture and Allied Sectors'	SAC, Ahmedabad 28-06-2017 to 29- 06-2017
Dr. C. Thamban, AHD Social Science	Workshop on 'Watershed based Development'	Taliparamba, Kannur 29-06-2017
Dr. Chandrika Mohan, Principal Scientist	Seminar on "Nurturing naturalistic intelligence to craft a green world"	College of Technical Education, Kayamkulam 09-06-2017
Dr. Murali Gopal, Principal Scientist	Circular Economy Seminar-2017	FICCI, New Delhi 25-04-2017 to 26-04-2017

OTHER INFORMATION

Import of cocoa germplasm

Cocoa germplasm holding was enhanced with import of 17 clones comprised of white beaned types rich in flavor components, high in bean index and shade tolerance from Intermediate Cacao Quarantine Centre (ICQC), University of Reading, UK, brought through ICAR-NBPGR, New Delhi and conserved at ICAR- CPCRI, Regional Station, Vittal for breeding programs.

Women Cell activities

The Farmers FIRST Project of ICAR CPCRI facilitated nine women self help groups comprising 130 active members. The local innovations are sharing/contributing labour, investment and management of crops, which accounts for more than mere participation, but acting as partner in agricultural development in rural areas. The farming activities include turmeric, tuber crops, hardening of tissue culture banana, traditional paddy varieties, tissue culture banana, animal husbandry, and as horizontal technology dissemination agents.

Swachh Bharat activities

Regular cleaning work have been undertaken around the farm, tube well, office premises as well as different experimental fields showcasing cleanliness as part of clean and green farming.

Staff of ICAR-CPCRI carrying out Swachh Bharat activities

PERSONALIA

Promotion

Name	From (Designation)	To (Designation)	w.e.f.
Smt. Luicy D' Souza	Assistant, ICAR-CPCRI, Kasaragod	Assistant Administrative Officer, ICAR-CPCRI, Kasaragod	01-06-2017

Transfers

Name of the staff	From (Place)	To (Place)	Date
Dr. K.M. Anes	Scientist (Nematology), ICAR-IISR, Indore	Scientist (Nematology), ICAR-CPCRI (RS), Kayamkulam	01-04-2017
Shri K. Devadas	ACTO (Field/ Farm), ICAR-CPCRI, RC, Minicoy	ACTO (Field/ Farm), ICAR-CPCRI, Kasaragod	01-04-2017
Shri T.N. Vidhyadharan	Assistant, ICAR-CPCRI, RC, Minicoy	Assistant, ICAR-CPCRI, Kasaragod	01-04-2017
Shri S. Karan Chandra Bose	Sr. Finance & Accounts Officer, ICAR-CIFRI, Barrackpore	Sr. Finance & Accounts Officer, ICAR-CPCRI, Kasaragod	21-04-2017
Shri T.D.S. Prakash	Finance & Accounts Officer, ICAR-CPCRI, Kasaragod	Finance & Accounts Officer, ICAR-IISR, Kozhikode	25-04-2017
Shri K.M. Jayarama Naik	Administrative Officer, ICAR-CPCRI, Kasaragod	Administrative Officer, ICAR-NIVEDI, Bangalore	29-04-2017
Dr. D. Jaganathan	Scientist (Ag. Extension), ICAR-CPCRI, Kasaragod	Scientist (Ag. Extension), ICAR-CTCRI, Thiruvananthapuram	31-05-2017
Dr. K. Devakumar	Senior Scientist (Biotech.), ICAR-CPCRI, Kasaragod	Senior Scientist (Biotechnology), ICAR-SBI, Coimbatore	20-06-2017
Shri M.V. Sreedharan	Senior Technical Assistant, ICAR-CPCRI, Kasaragod	Senior Technical Assistant, ICAR-CPCRI, Regional Station, Vittal	30-06-2017
Shri A.R. Padmanabha Naik	Senior Technician, ICAR-CPCRI, Kasaragod	Senior Technician, ICAR-CPCRI, Regional Station, Vittal	30-06-2017
Shri Subhash Paul	Assistant, ICAR-CPCRI, Research Centre, Kahikuchi	Assistant, ICAR- CPCRI, Research Centre, Mohitnagar	30-06-2017

Retirements

Name	Designation	Place	Date
Shri K. Narayanan Nair	Skilled Support Staff	ICAR-CPCRI, Kasaragod	30-04-2017
Smt. K. Prabhavathi	Assistant Administrative Officer	ICAR-CPCRI, Kasaragod	31-05-2017
Shri Haridas Poojari	Skilled Support Staff	ICAR-CPCRI, Kasaragod	31-05-2017
Shri Medappa Gowda	Skilled Support Staff	ICAR-CPCRI, Research Centre, Kidu	31-05-2017
Shri Murugan	Skilled Support Staff	ICAR-CPCRI, Kasaragod	31-05-2017
Shri P. Madhavan Nair	Skilled Support Staff	ICAR-CPCRI, Kasaragod	30-06-2017
Smt. Janaki Devi	Skilled Support Staff	ICAR-CPCRI, Research Mohitnagar	30-06-2017
Shri K. Narayana Paleri	Skilled Support Staff	ICAR-CPCRI, Regional Station, Vittal	30-06-2017
Shri K.C. Chinnappa	Skilled Support Staff	ICAR-CPCRI, Regional Station, Vittal	30-06-2017

TECHNOLOGY COMMERCIALIZATION

Technology	Amount (₹)	Licensee
Collection of fresh and hygienic Kalparasa and production of natural coconut sugar	15,000	Mr Vishnu Charan, Singanallur, Coimbatore, Tamil Nadu
	15,000	Mr. Dilip Kumar Raju Indukuri, Vadlavanipalem, West Godavari District, Andhra Pradesh
	15,000	Mr. T.H. Siva Prasad, Chitlapakkam, Chennai, T.N.
	15,000	Mr V. Gnanasambandam, Ramanuja Nagar, Coimbatore, Tamil Nadu
	15,000	Mr Ganapati S Naik, AVP Uttara Kannada CFPC Ltd., Karnataka
Coconut chips	15,000	Smt. Lisha M. M., Kuttiyadi, Kozhikode, Kerala
	15,000	Mr Abdul Rasheed .P.K., Kakkadampuram, Malappuram, Kerala
	15,000	M/s Crisco, Nammalwarpet, Chennai, Tamil Nadu
Matured coconut water based value added products	15,000	Mr. Shridhar Mallaiah, Vidyashankar Nagar, Mysore, Karnataka
	15,000	Mr Abdul Rasheed P.K., Kakkadampuram, Malappuram, Kerala
	15,000	M/s Crisco, Nammalwarpet, Chennai, Tamil Nadu
Matured coconut based value added products	15,000	Mr. Nijo Raju Mathew, Kumbazha, Pathanamthitta, Kerala
	15,000	Perambra Coconut Producer Company, Perambra, Kozhikode, Kerala
Technical knowhow of production of virgin coconut oil (VCO)	40,000	Mr. Shridhar Mallaiah, Vidyashankar Nagar, Mysore, Karnataka
Design and drawing of VCO Cooker	20,000	Shri M. Nachimuthu, N.M. Engineering Industries, Chinniyampalayam, Coimbatore, Tamil Nadu
Preservation of carbonated tender coconut water	25,000	Mr. S. Chidambaranathan, Vellalore, Coimbatore, Tamil Nadu
Total	**2,80,000**	

Dr. P. Chowdappa, Director handing over license agreement on process of virgin coconut oil production to entrepreneurs

MERA GAON MERA GAURAV

ICAR- CPCRI, Kasaragod and its Regional Stations and Research Centres are implementing the MGMG initiative in collaboration with other stakeholders viz., Department of Agriculture, Krishi Vigyan Kendra, grama panchayat, input dealers, progressive farmers, SHGs etc. During April - June 2017, training programmes, demonstration on improved practices, farm advisory visits and mobile advisory services were organized in the selected villages. A total of 75 villages were adopted activities were undertaken for the overall development of the villages as detailed below.

Activities	No. of farmers benefitted
Field visits	856
Gostis/Trainings	1023
Mobile advisories	990
Literature support	961
Facilitation for contact with other agencies	2654

Providing advice to nursery irrigation at Kasaragod

Training on Azolla cultivation at Alappuzha

CELEBRATION

World Environmental Day

ICAR-CPCRI conducted a workshop on "Coconut for Nurturing Ecology and Nourishing Society" on 5th June 05, 2017 at its Regional Station, Kayamkulam towards honing agricultural acumen among Higher Secondary School students as part of World Environment Day (WED) celebrations fully supported by Kerala State Council for Science technology and Environment, Thiruvananthapuram. Scientists led the technical sessions on Ecology Edging out Economics, Coconut and Ecosystem Service, Coconut as Health Food, Diversity of Coconut and Invertebrates intertwined with Coconut. Eleven schools participated in the quiz competition entitled "Coconut to Nature and Mankind". Govt. Boys Higher Secondary School, Kayamkulam and MSM School, Kayamkulam emerged victorious. Students were also taken around experimental plots. In the evening valedictory function, Dr. V. Krishnakumar, Head presided over the function and Smt B. Vijayamma, President, Krishnapuram Grama panchayat inaugurated the programme by lighting lamp and urged the students to connect to nature by critical observation. Dr. JG Ray, Head, School of Biosciences, M.G. University made a scintillating talk on "Ecology and Environment" and advised the participants to learn from Nature as nature hardly makes any mistakes. A booklet and E-copy on "Connecting Coconut to Citizens" were released on the occasion. Dr. A. Joseph Rajkumar, Principal Scientist functioned as the Programme Coordinator.

ICAR - KVK Alappuzha in collaboration with Eco Club of Govt. Higher Secondary School, Mangalam celebrated the World Environment Day on 5th June 2017 in Arattupuzha Grama Panchayath. An awareness talk on 'connecting people to nature through agriculture', highlighting the relevance of conserving natural resources through different agricultural practices, followed by an orientation programme for 'Terrace cultivation of organic vegetables' was conducted by Dr. K. Sajnanath (SMS, KVK). Smt. Jayasree, M. Headmistress, Shri S. Jayalal Co-coordinator of Eco Club, and Smt. K. Kanakamma spoke on the occasion in which more than 50 students from eco club participated.

Dr. P. Chowdappa, Director planting a sapling near ICAR-CPCRI Nursery School at Kasaragod

International Yoga Day

As per the directions of Deputy Director (GAC), ICAR, New Delhi, 3rd International Day of Yoga was celebrated at ICAR-CPCRI, Kasaragod on 21st June, 2017. Dr. (Smt.) Sharvari, Yoga Scholar and Ayurvedic Physician, delivered a lecture on the relevance of yoga to maintain the health of people both mentally and physically. She also explained various components of yoga practices such as Asanas and Pranayama based on Pathanchali Yoga Sutra to empower ourselves to take more responsibility towards our nation with a free mind. An impressive display of Yogaasanas accompanied with a lyric of Gurupaduka strothra was presented by the students of Chaithanya Vidyalaya, Kasaragod was well appreciated and created more interest in practicing yoga and lead a stress free life.

Yoga demonstration by the students of Chaithanya Vidyalaya at ICAR-CPCRI, Kasaragod

International Yoga Day-2017 was observed at ICAR-CPCRI, Regional Station, Kayamkulam on 21st June, 2017 in a befitting manner with all officers and staff for the "Mass Demonstration Programme" performing yoga in its true essence. Shri K.N. Sajeev of the Regional Station functioned as the Master Demonstrator wherein he executed the masterly art and imparted the yogic techniques among the participants. In a brief function convened in the afternoon, Shri K.S. Panicker, Former Deputy Superintendent of Police (CBI) and leading yoga guru along with his disciples graced the occasion. In his presidential address, Dr. V. Krishnakumar, Head emphasized on the health benefits of yoga in this changing lifestyle of mankind. Shri K.S. Panicker inaugurated the session by lighting the lamp and linked yogic science with the epic Mahabharat. He opined yoga as a spiritual embodiment that elevates one into a conscious gleeful lifestyle reliving from all stresses. Dr. Chandrika Mohan, Principal Scientist functioned as the Programme Coordinator.

International Yoga Day was celebrated on 21st June 2017 at RS, Vittal. All the staff members actively participated in the yoga session conducted by Dr. S. Elain Apshara and Shri. P. Ashok.

International Yoga Day was celebrated at ICAR-CPCRI, RC, Kidu on 21st June, 2017 by all the staff members of the centre under the expert guidance of Sh. Vrijesh, Yoga Instructor.

International Yoga day was celebrated at ICAR-CPCRI, RC, Mohitnagar on 21st June, 2017 at this Research Centre. All the staff participated in this occasion. Few local youths were also invited to participate and make them aware on importance of Yoga for health and mind.

International Yoga Day celebration at ICAR-CPCRI, Regional Station, Kayamkulam

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